

CLAIMS

The invention claimed is:

1. A system for detecting moisture on a surface comprising:
 - a sensor that is divided into a plurality of subwindows each having a sensitivity that is variable independent of the other subwindows;
 - an optical system operative to direct light rays from at least a portion of the surface onto said sensor; and
 - a processing system in communication with said sensor and operative to adjust the sensitivity of the subwindows and to analyze data from said sensor to detect moisture on the surface.
2. The system of claim 1, wherein said processing system adjusts the sensitivity of the subwindows by adjusting an integration period during which said sensor accumulates charge in response to light incident of said sensor.
3. The system of claim 1, wherein said processing system adjusts the sensitivity of a subwindow by determining an average grayscale value for pixels forming the subwindow, comparing the average grayscale value with a target average value, and adjusting the exposure time of the subwindow as a result of the comparison.
4. The system of claim 1, wherein said processing system controls the windshield wipers based upon a number of subwindows in which moisture is detected.
5. The system of claim 1 and further comprising:
 - a supplemental illuminator for selectively illuminating the portion of the surface imaged onto the sensor; and
 - memory for storing a first set of data obtained by said sensor when the supplemental illuminator is illuminating the portion of the surface, and for storing a second set of data

obtained by said sensor when the supplemental illuminator is not illuminating the portion of the surface,

wherein said processing system is in communication with said memory, said supplemental illuminator, and said sensor and operative to compare the first and second sets of data stored in said memory and to analyze results of the comparison to detect moisture on the surface.

6. A windshield wiper control system for a vehicle comprising:
 - a sensor that is divided into a plurality of subwindows;
 - an optical system operative to direct light rays from at least a portion of the surface of the windshield onto said sensor; and
 - a processing system in communication with said sensor and operative to analyze data from said sensor to determine whether moisture is detected in each subwindow and to control the windshield wipers based upon a number of subwindows in which moisture is detected.
7. The windshield wiper control system of claim 6, wherein said processing system is configured to detect edges of objects in each subwindow.
8. The windshield wiper control system of claim 7, wherein said processing system determines that moisture is present when the number of subwindows in which an edge is detected reaches a predetermined threshold.
9. The windshield wiper control system of claim 6, wherein said processing system determines a variance between the grayscale values of the pixels in a subwindow and excludes the subwindow from consideration if the subwindow has a variance exceeding a threshold level.
10. The windshield wiper control system of claim 6, wherein said processing system is responsive to at least one remote device to enable or disable automatic control of the windshield wipers.

11. The windshield wiper control system of claim 6, wherein at least one of said subwindows has a sensitivity that is independently variable, and said processing system is operative to independently adjust the sensitivity of said at least one subwindow and to analyze data from said sensor to detect moisture.
12. The windshield wiper control system of claim 6, wherein said processing system determines a number of subwindows in which moisture is detected and controls the windshield wipers if the number of subwindows in which moisture is detected exceeds a threshold number.
13. A windshield wiper control system for a vehicle comprising:
a sensor;
an optical system operative to direct light rays from at least a portion of the surface of the windshield onto said sensor; and
a processing system in communication with said sensor and operative to analyze data from said sensor to detect moisture on the windshield and to automatically activate the windshield wipers when moisture is detected, wherein said processing system is responsive to at least one remote device to enable or disable automatic control of the windshield wipers.
14. The windshield wiper control system of claim 13, wherein the at least one remote device is associated with a car wash such that automatic control of the windshield wipers may be disabled prior to entry into the car wash.
15. The windshield wiper control system of claim 14, wherein said processing system is coupled to an RF receiver and the at least one remote device is an RF transmitter, such that said processing system enables or disables automatic activation of the windshield wipers when a predetermined signal is received by the RF receiver from the RF transmitter.
16. The windshield wiper control system of claim 15, wherein the RF receiver is a remote keyless entry receiver.

17. The windshield wiper control system of claim 14, wherein said processing system is coupled to a microwave receiver that receives signals from the at least one remote device, which includes a plurality of satellites, wherein said processing system disables automatic activation of the windshield wipers in response to information from the microwave receiver.

18. The windshield wiper control system of claim 17, wherein the information from the microwave receiver is that microwave receiver is receiving signals from less than two satellites.

19. The windshield wiper control system of claim 18, wherein satellites are part of a global positioning system constellation and the microwave receiver is a GPS receiver.

20. The windshield wiper control system of claim 14, wherein said processing system disables manual activation of wipers.